IN THE CLAIMS:

Please amend the claims as follows:

Claim 1, line 14: after "conditions" insert --, i.e. 5-10°C under the melting point T_m,--;

Claim 3, line 1: delete "or 2";

Claim 4, line 1: change "any of the preceding claims" to --claim 1--;

Claim 5, line 1: change "any of the preceding claims" to --claim 1--;

Claim 6, line 1: change "any of the preceding claims" to --claim 1--;

Claim 7, line 1: change "any of the preceding claims" to --claim 1--;

Claim 8, line 1: change "any of the preceding claims" to --claim 1--;

Claim 9, line 1: change "any of the preceding claims" to --claim 1--;

Claim 12, line 1: change "any of the preceding claims" to --claim 1--;

Claim 13, line 1: change "any of the preceding claims" to --claim 1--;

Claim 16, line 1: change "any of claims 1-13" to --claim 1--;

Claim 18, line 1: delete "or 17";

Claim 19, line 1: change "any of the preceding claims" to --claim 1--;

Claim 22, line 1: delete "or 21";

Claim 23, line 1: change "any of claims 20-22" to --claim 20--;

Claim 24, line 1: change "any of claims 20-23" to --claim 20--;

Claim 25, line 1: change "any of claims 20-24" to --claim 20--;

Claim 26, line 1: change "any of claims 20-25" to --claim 20--;

Claim 28, line 1: delete "or 27";

Claim 29, line 1: change "any of claims 20-28" to --claim 20--;

Claim 30, line 1: change "any of claims 20-29" to --claim 20--;

Claim 33, line 2: change "any of claims 20-32" to --claim 20--;

Claim 35, line 1: delete "or 34";

Claim 36, line 1: change "any of claims 1-19" to --claim 1--;

Claim 39, line 1: change "any of claims 36-38" to --claim 36--;

Please amend Claim 40 as follows:

40. A vector according to [any of claims 36-39] claim 36, wherein the vector comprises, in the 5'→3' direction and in operable linkage, a promoter for driving expression of [the] an isolated nucleic acid fragment [according to any of claims 1-19] which encodes a polypeptide fragment which exhibits a substantial immunological reactivity with a rabbit polyclonal antibody raised against a polypeptide having an apparent molecular weight of 13kDa as determined by SDS-PAGE followed by visualization, said polypeptide being derived from Borrelia burgdorferi B313 and being encoded by the nucleotide sequence of SEQ ID NO: 18, said rabbit polyclonal antibody exhibiting substantially no immunological reactivity with proteins from at least 95% of spirochaetes randomly selected from the group consisting of *Borrelia hermsii*, *Borrelia crocidurae*, *Borrelia anserina* and *Borrelia hispanica*, and/or hybridises readily under highly stringent hybridization conditions with a DNA fragment having a nucleotide sequence selected from the group consisting of SEQ ID NO: 18, SEQ ID NO: 20, and SEQ ID NO: 22, or with a DNA fragment complementary thereto, but exhibits no substantial hybridization when the hybridization conditions are highly stringent with genomic DNA from at least 95% of spirochaetes randomly selected from the group consisting of *Borrelia hermsii*, *Borrelia crocidurae*, *Borrelia anserina* and *Borrelia hispanica*, a nucleic acid sequence encoding a leader peptide enabling secretion of or integration into the membrane of the polypeptide

fragment, [the nucleic acid fragment according to any of claims 1-19,] said isolated nucleic acid fragment, and a nucleic acid sequence encoding a terminator.

Claim 42, line 1: please delete "or 41".

Please amend Claim 43 as follows:

43. A transformed cell carrying the vector of [any of claims 36-42] claim 36 and capable of replicating [the nucleic acid fragment according to any of claims 1-19] an isolated nucleic acid fragment which encodes a polypeptide fragment which exhibits a substantial immunological reactivity with a rabbit polyclonal antibody raised against a polypeptide having an apparent molecular weight of 13kDa as determined by SDS-PAGE followed by visualization, said polypeptide being derived from Borrelia burgdorferi ~~B313~~ and being encoded by the nucleotide sequence of SEQ ID NO: 18, said rabbit polyclonal antibody exhibiting substantially no immunological reactivity with proteins from at least 95% of spirochaetes randomly selected from the group consisting of *Borrelia hermsii*, *Borrelia crocidurae*, *Borrelia anserina* and *Borrelia hispanica*, and/or hybridises readily under highly stringent hybridization conditions with a DNA fragment having a nucleotide sequence selected from the group consisting of SEQ ID NO: 18, SEQ ID NO: 20, and SEQ ID NO: 22, or with a DNA fragment complementary thereto, but exhibits no substantial hybridization when the hybridization conditions are highly stringent with genomic DNA from at least 95% of spirochaetes randomly selected from the group consisting of *Borrelia hermsii*, *Borrelia crocidurae*, *Borrelia anserina* and *Borrelia hispanica*.

Please amend Claim 47 as follows:

47. A stable cell line producing [the polypeptide according to any of claims 20-35] a polypeptide fragment which exhibits a substantial immunological reactivity with a

polyclonal rabbit antibody raised against a polypeptide having an apparent molecular weight of 13 kDa as determined by SDS PAGE followed by visualization and being derived from *Borrelia burgdorferi* B313, said polypeptide comprising the amino acid sequence 1-167 of SEQ ID NO: 19, said polyclonal rabbit antibody exhibiting substantially no immunological reactivity with whole cell preparations from at least 95% of randomly selected *B. hermsii, B. crocidurae, B. anserina,* or *B. hispanica*, with the proviso that said polypeptide is essentially free from other *Borrelia*-derived antigens when it is identical in amino acid sequence to a 13kDa surface exposed polypeptide which can be extracted from *Borrelia burgdorferi sensu lato,* which carries the vector according to [any of claims 36-42] claim 36 and which expresses [the nucleic acid fragment according to any of claims 1-19] an isolated nucleic acid fragment which encodes a polypeptide fragment which exhibits a substantial immunological reactivity with a rabbit polyclonal antibody raised against a polypeptide having an apparent molecular weight of 13kDa as determined by SDS-PAGE followed by visualization, said polypeptide being derived from Borrelia burgdorferi B313 and being encoded by the nucleotide sequence of SEQ ID NO: 18, said rabbit polyclonal antibody exhibiting substantially no immunological reactivity with proteins from at least 95% of spirochaetes randomly selected from the group consisting of *Borrelia hermsii, Borrelia crocidurae, Borrelia anserina* and *Borrelia hispanica*, and/or hybridises readily under highly stringent hybridization conditions with a DNA fragment having a nucleotide sequence selected from the group consisting of SEQ ID NO: 18, SEQ ID NO: 20, and SEQ ID NO: 22, or with a DNA fragment complementary thereto, but exhibits no substantial hybridization when the hybridization conditions are highly stringent with genomic DNA from at least 95% of spirochaetes randomly selected from the group consisting of *Borrelia hermsii, Borrelia crocidurae, Borrelia anserina* and *Borrelia hispanica*.

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Please amend Claim 48 as follows:

48. A method of preparing a polypeptide fragment [as defined in any of claims 1-19] which exhibits a substantial immunological reactivity with a rabbit polyclonal antibody raised against a polypeptide having an apparent molecular weight of 13kDa as determined by SDS-PAGE followed by visualization, said polypeptide being derived from Borrelia burgdorferi B313 and being encoded by the nucleotide sequence of SEQ ID NO: 18, said rabbit polyclonal antibody exhibiting substantially no immunological reactivity with proteins from at least 95% of spirochaetes randomly selected from the group consisting of *Borrelia hermsii*, *Borrelia crocidurae*, *Borrelia anserina* and *Borrelia hispanica*, and/or hybridises readily under highly stringent hybridization conditions with a DNA fragment having a nucleotide sequence selected from the group consisting of SEQ ID NO: 18, SEQ ID NO: 20, and SEQ ID NO: 22, or with a DNA fragment complementary thereto, but exhibits no substantial hybridization when the hybridization conditions are highly stringent with genomic DNA from at least 95% of spirochaetes randomly selected from the group consisting of *Borrelia hermsii*, *Borrelia crocidurae*, *Borrelia anserina* and *Borrelia hispanica*, the method comprising

- culturing the transformed cell according to [any of claims 43-46] claim 43 or the stable cell line according to claim 47 under conditions facilitating the expression of the polypeptide fragment thereby, and

- harvesting the polypeptide fragment, and optionally subjecting the polypeptide to post-translational modification(s);

or

- synthesizing the polypeptide fragment by solid phase peptide synthesis or by liquid-phase peptide synthesis.

Claim 50, line 1: change "any of claims 20-35" to --claim 20--;

Claim 50, line 2: delete "or of the polypeptide fragment prepared by the method according to claim 48 or 49";

Claim 52, line 1: delete "or 51";

Please amend Claim 53 as follows:

53. A live vaccine comprising a non-pathological microorganism carrying and being capable of expressing [the nucleic acid fragment according to any of claims 1-19] an isolated nucleic acid fragment which encodes a polypeptide fragment which exhibits a substantial immunological reactivity with a rabbit polyclonal antibody raised against a polypeptide having an apparent molecular weight of 13kDa as determined by SDS-PAGE followed by visualization, said polypeptide being derived from Borrelia burgdorferi B313 and being encoded by the nucleotide sequence of SEQ ID NO: 18, said rabbit polyclonal antibody exhibiting substantially no immunological reactivity with proteins from at least 95% of spirochaetes randomly selected from the group consisting of *Borrelia hermsii*, *Borrelia crocidurae*, *Borrelia anserina* and *Borrelia hispanica*, and/or hybridises readily under highly stringent hybridization conditions with a DNA fragment having a nucleotide sequence selected from the group consisting of SEQ ID NO: 18, SEQ ID NO: 20, and SEQ ID NO: 22, or with a DNA fragment complementary thereto, but exhibits no substantial hybridization when the hybridization conditions are highly stringent with genomic DNA from at least 95% of spirochaetes randomly selected from the group consisting of *Borrelia hermsii*, *Borrelia crocidurae*, *Borrelia anserina* and *Borrelia hispanica* so as to produce the polypeptide fragment according to [any of claims 20-35] claim 20, the live vaccine being effective in conferring

increased resistance to infection with *Borrelia burgdorferi sensu lato* in an animal, including a human being.

Claim 55, line 2: change "any of claims 20-35" to --claim 20--;

Claim 55, line 3: delete "or of the polypeptide fragment prepared by the method according to claim 48 or 49";

Claim 57, line 2: change "any of claims 20-35" to --claim 20--;

Claim 57, line 2: delete "or at least two non-identical polypeptide fragments prepared by the method according to claim 48 or 49";

Please amend Claim 58 as follows:

58. A vaccine comprising [the nucleic acid fragment according to any of claims 1-19] an isolated nucleic acid fragment which encodes a polypeptide fragment which exhibits a substantial immunological reactivity with a rabbit polyclonal antibody raised against a polypeptide having an apparent molecular weight of 13kDa as determined by SDS-PAGE followed by visualization, said polypeptide being derived from Borrelia burgdorferi B313 and being encoded by the nucleotide sequence of SEQ ID NO: 18, said rabbit polyclonal antibody exhibiting substantially no immunological reactivity with proteins from at least 95% of spirochaetes randomly selected from the group consisting of *Borrelia hermsii*, *Borrelia crocidurae*, *Borrelia anserina* and *Borrelia hispanica*, and/or hybridises readily under highly stringent hybridization conditions with a DNA fragment having a nucleotide sequence selected from the group consisting of SEQ ID NO: 18, SEQ ID NO: 20, and SEQ ID NO: 22, or with a DNA fragment complementary thereto, but exhibits no substantial hybridization when the hybridization conditions are highly stringent with genomic DNA from at least 95% of spirochaetes randomly selected from the group consisting of *Borrelia hermsii*, *Borrelia*

crocidurae, *Borrelia anserina* and *Borrelia hispanica* or a vector according to [any of claims 36-42] claim 36, the vaccine effecting *in vivo* expression of antigens by an animal, including a human being, to whom the vaccine has been administered, the amount of expressed antigens being effective to confer substantially ~~increased~~ resistance to infections with *Borrelia burgdorferi sensu lato* in an animal, including a human being.

Claim 59, line 3: change "any of claims 20-35" to --claim 20--;

Claim 59, line 3: delete "or the polypeptide fragment prepared by the method according to claim 48 or 49";

Claim 60, line 3: change "any of claims 1-19" to --claim 1--;

Claim 61, line 3: change "any of claims 50-58" to --claim 50--;

Claim 62, line 3: change "any of claims 20-35" to --claim 20--;

Claim 62, line 3: delete "or with the polypeptide fragment prepared by the method according to claim 48 or 49";

Claim 63, line 3: change "any of claims 1-19" to --claim 1--;

Claim 64, line 2: change "any of claims 1-19" to --claim 1--;

Please amend Claim 65 as follows:

65. A diagnostic kit comprising

- a polypeptide fragment according to [any of claims 20-35] claim 20, and a means for detecting the polypeptide fragment with antibody bound thereto,

- [a nucleic acid fragment according to any of claims 1-19] an isolated nucleic acid fragment which encodes a polypeptide fragment which exhibits a substantial immunological reactivity with a rabbit polyclonal antibody raised against a polypeptide having an apparent molecular weight of 13kDa as determined by SDS-PAGE followed by visualization, said

polypeptide being derived from Borrelia burgdorferi B313 and being encoded by the nucleotide sequence of SEQ ID NO: 18, said rabbit polyclonal antibody exhibiting substantially no immunological reactivity with proteins from at least 95% of spirochaetes randomly selected from the group consisting of *Borrelia hermsii*, *Borrelia crocidurae*, *Borrelia anserina* and *Borrelia hispanica*, and/or hybridises readily under highly stringent hybridization conditions with a DNA fragment having a nucleotide sequence selected from the group consisting of SEQ ID NO: 18, SEQ ID NO: 20, and SEQ ID NO: 22, or with a DNA fragment complementary thereto, but exhibits no substantial hybridization when the hybridization conditions are highly stringent with genomic DNA from at least 95% of spirochaetes randomly selected from the group consisting of *Borrelia hermsii*, *Borrelia crocidurae*, *Borrelia anserina* and *Borrelia hispanica* and a means for detecting the binding between the nucleic acid fragment and a nucleic acid bound thereto, or

- a set of nucleic acid primers which, when used in a molecular amplification procedure together with the nucleic acid fragment [according to any of claims 1-19], will result in specific amplification of said nucleic acid fragment, and a means for detecting the amplified nucleic acid fragment.

Claim 66, line 3: change "any of claims 20-35" to --claim 20--; and

Claim 66, line 3: delete "or prepared according to the method of claim 48 or 49".

Please add the following claims:

--67. A vaccine comprising an amount of the polypeptide fragment prepared by the method according to claim 48, the amount of the polypeptide fragment being effective to confer substantially increased resistance to infections with *Borrelia burgdorferi sensu lato* in an animal, including a human being, the polypeptide fragment being formulated in combination

with a pharmaceutically acceptable carrier, diluent or vehicle, and the vaccine optionally further comprising an adjuvant.

68. A combination vaccine comprising an amount of the polypeptide fragment prepared according to the method of claim 48, the amount of the polypeptide fragment being effective to confer substantially increased resistance to infections with *Borrelia burgdorferi sensu lato* in an animal, including a human being; and at least one further Borrelia antigen, the polypeptide fragment and the antigen being formulated in combination with a pharmaceutically acceptable carrier, vehicle or diluent and the vaccine optionally further comprising an adjuvant.

69. A combination vaccine comprising at least two non-identical polypeptide fragments prepared by the method according to claim 48, the vaccine comprising an amount of the polypeptide fragments effective to confer substantially increased resistance to infections with *Borrelia burgdorferi sensu lato* in a animal, including a human being, in combination with a pharmaceutically acceptable carrier, vehicle, or diluent, the vaccine optionally further comprising an adjuvant.

70. A diagnostic composition adapted for the determination of *Borrelia burgdorferi sensu lato* in a sample, the composition comprising the polypeptide fragment prepared by the method according to claim 48, the amount of the polypeptide fragment being effective to detectably react with antibodies present in the sample, the antibodies being directed against *Borrelia burgdorferi sensu lato*, the composition optionally comprising a detectable label.

71. A method of determining the presence of antibodies directed against *Borrelia burgdorferi sensu lato* in a sample, comprising incubating the sample with the